REMARKS

Claims 12-24 are currently pending. Of these, claims 12, 16, and 21 are independent. The Office Action indicates that claims 12 and 16 stand finally rejected under 35 U.S.C. §103(a) as being obvious over U.S. Pat. No. 6,256,125 ("Uehara") in view of U.S. Pat. App. Pub. No. 2002/0064336 ("Graves"). Claim 21 stands finally rejected under 35 U.S.C. §103(a) as being obvious over Uehara in view of Graves, and in further view of U.S. Pat. App. Pub. No. 2009/0142060 ("Strasser"). However, these references, alone and in combination, do not teach or suggest every limitation of the independent claims.

The claimed invention provides a switching node for a Wavelength Division Multiplex (WDM) optical network that allows a protection path of an optical signal to pass a node, even if a failure in the node blocks the working path of the signal. To that end, the node comprises at least one switching unit and a plurality of optical interfaces to connect to a WDM transmission line. Each optical interface includes a demultiplexer that disassembles incoming multiplexed signals received at an input port of the switching unit, and a multiplexer that assembles output channels from corresponding output ports on the switching unit into a multiplexed signal.

Claim 12 is directed to a node for an optical communication network and recites, "an input branching mechanism connected directly to the at least one receiver, and disposed on the path of the input channels between each optical interface and the switching unit to selectively supply an input channel alternatively to the switching unit or to the receiver." None of the references, alone or in combination teaches this limitation.

The primary reference, Uehara, discloses a node for a wavelength division multiplexing (WDM) optical transmission system. As seen in Figure 4 of Uehara (which the Office Action relies upon heavily to support the rejection of claim 12), the node includes a demultiplexer 15, a multiplexer 18, an optical switch 16, and a bank or array of 2x2 optical switches 17. The Office Action equates the 2x2 switches to the claimed branching mechanism. However, Uehara does

not support the allegation. The disclosed 2x2 switches are not the same thing as the claimed branching mechanism, nor is there any support in Uehara that shows that they perform the same function as the claimed branching mechanism. There are at least two aspects of Uehara that evidence this.

First, claim 12 requires that the input branching mechanism be located in a specific place – i.e., *on the path of the input channels* between each optical interface and the switching unit. The switching units 17 of Uehara, in contrast, never touch an input channel. Rather, the disclosed switches are disposed only along the paths of the output channels leading to the multiplexer. *Uehara*, col. 8, ll. 11-19. And, because the switches are disposed only along the output channels in Uehara, it is impossible for those switches to *selectively supply an input channel alternatively to the switching unit or to the receiver*, as claimed.

The Office Action acknowledges these facts, but contends that one skilled in the art would have modified Uehara to include *another* set of switches 17 along the input channels so as to avoid the insertion loss that is "inherent" in Uehara. *Office Action*, p. 3, ll. 8-14. Respectfully, the allegation is conclusory and has no basis in Uehara.

According to Uehara, the nodes in the network may be placed at far distances from each other. *Uehara*, col. 5, ll. 49-60. Therefore, the disclosed node in Uehara is designed to perform a regenerative repeating function. To that end, the switches 17 function *specifically* to insert/separate an arbitrary monitor-signal wavelength component generated by a monitor-signal transmitter (see 68, Figure 9) into/out-of the traffic signal passing through the node. In other words, as stated by Uehara, the switches perform a separation/insertion function to an arbitrary wavelength component to ensure that the monitor-signal can always be sent to the next downstream node. *Uehara*, col. 7, ln. 55 – col. 8, ln. 19.

Given the stated function of the Uehara switches, there is no reason for anyone skilled in the art to add another set of switches along the input channels as alleged in the Office Action.

Such an additional set of switches would only add to the cost and complexity of the disclosed node, and would only perform a function that is already being performed on the same signals along the output channels. Indeed, it is non-sensical to incur the additional costs and complexity associated with adding another set of switches along the input channels of Uehara to regenerate a monitor-signal when that function is already being performed along the output channels of the same node.

A second way in which the switches 17 Uehara differ from the claimed input branching mechanism is that Uehara does not teach or suggest the disclosed switches being *directly connected to at least one receiver*. Again, the Office Action acknowledges this fact, but nonetheless dismisses the difference out-of-hand. According to the Office Action, a receiver is inherently present in Uehara where channels are being dropped, and one skilled in the art would have connected such a receiver directly to the switches to each of the drop lines to minimize insertion losses. *Office Action*, p. 2, ¶2, ll. 12-14; p. 3, ll. 15-21. Indeed, these statements are conclusory and are not supported whatsoever by Uehara.

Uehara is fundamentally concerned with detecting, in a WDM network, a wavelength that needs regeneration, switching that wavelength to a regenerator, and adding the wavelength back to the optical switch for further transmission after regeneration. Uehara is *not* concerned with worker and protection paths in a WDM network, and does not teach or suggest a receiver connected directly to the switches. In fact, Uehara is conspicuously silent about such a receiver, let alone its alleged position within a node relative to a set of switches. It is improper for the Office to imagine such a receiver connected directly to the switches given that Uehara never mentions such a receiver or its placement relative to the switches. There may well be a receiver connected to the drop line in Uehara, as the Office Action suggests. However, based on the Uehara teachings, there is no reason to believe that the receiver is connected *directly* to

an input branching mechanism, as claimed. The only document that specifies and supports such a receiver and its exact placement is Applicant's own disclosure.

Thus, Uehara does not teach or suggest the above-cited claim limitation. And any contention to the contrary is conclusory and unsupported by Uehara. Further, the secondary reference, Graves, does not remedy these deficiencies.

Graves discloses providing protection for the partial failure of an optical switching unit by applying incremental redundancy and complex control mechanisms. The Office Action cites Graves because it allegedly discloses placing both a multiplexer and a demultiplexer in an optical interface on each side of an optical switch to support bi-directional traffic. Whatever Graves discloses, however, it does not teach or suggest "an input branching mechanism connected directly to the at least one receiver, and disposed on the path of the input channels between each optical interface and the switching unit to selectively supply an input channel alternatively to the switching unit or to the receiver," as claimed in claim 12.

Therefore, neither reference alone teaches or suggests "an input branching mechanism connected directly to the at least one receiver, and disposed on the path of the input channels between each optical interface and the switching unit to selectively supply an input channel alternatively to the switching unit or to the receiver." And because both references fail to teach or suggest this limitation, any combination of the two references also fails to teach or suggest this claim limitation. Accordingly, the cited references do not render claim 12 or any of its dependent claims obvious.

Claim 16 is also directed to node for an optical communication network and recites, "an output branching mechanism connected directly to the at least one transmitter, and disposed on the path of the output channels between each optical interface and the switching unit to selectively supply an output channel to the interface alternatively from the switching unit or from

the transmitter." Although the branching mechanism of claim 16 is an output branching mechanism, the references still fail to teach or suggest this limitation, alone or in combination.

More particularly, although the switches of Uehara are disposed between an optical switch and a multiplexer along the output channels, Uehara does not teach or suggest that the switches are connected *directly* to at least one transmitter. The Office Action dismisses this deficiency and states that a transmitter is inherently present where channels are being added. *Office Action*, p. 2, ¶2, ll. 12-14; p. 3, ll. 15-21. Whether a transmitter is present and connected to the switches is irrelevant. There is nothing in Uehara that teaches or suggests that the alleged transmitter is connected *directly* to the switches, as explicitly claimed in claim 16. In fact, Uehara, as the Office admits, does not even show a transmitter connected to the switches 17. The *only* document before the Office that specifies and supports a transmitter being directly connected to an output branching mechanism is Applicant's own disclosure. The Office is not permitted to use that disclosure, however, to reject the claims.

Uehara does not teach or suggest "an output branching mechanism connected directly to the at least one transmitter." It is improper for the Office to support a rejection by alleging that Uehara teaches connecting such a transmitter *directly* to the switches when Uehara never even mentions this aspect. Respectfully, the reasoning for the rejection of claim 16 is conclusory and not supported whatsoever by Uehara.

Graves fails to remedy Uehara as well. As stated above, Graves is cited merely for its alleged disclosure of a multiplexer/demultiplexer arrangement to allow bi-directional traffic signals.

Accordingly, for at least the foregoing reasons, neither Uehara nor Graves alone teaches or suggests "an output branching mechanism connected *directly* to the at least one transmitter." And because both references fail to teach or suggest this limitation, the combination of the

references also fails to teach or suggest this claim limitation. Accordingly, the cited references do not render claim 16 or any of its dependent claims obvious.

Finally, claim 21 is also directed to a node for an optical communication network and recites, "a branching mechanism disposed between each optical interface and the switching unit to selectively supply an output channel to the interface alternatively from the switching unit or from the transmitter and to selectively supply an input channel alternatively to the switching unit or to the receiver...and...wherein *the transmitter and receiver of each transponder are connected directly to the same branching mechanism*. For the reasons stated above, neither Uehara nor Graves, alone or in combination, teaches or suggests this limitation. The addition of Strasser, however, does nothing to remedy those deficiencies.

Strasser discloses an interconnection device that transfers WDM signals between different WDM optical communication systems. The Office appears to cite Strasser because it allegedly discloses transponders. Whatever Strasser discloses, however, Strasser does not teach or suggest that each transponder comprises a transmitter and a receiver that are connected directly to the same branching mechanism.

Accordingly, none of Uehara, Graves, and Strasser teaches or suggests, alone or in combination, this limitation of claim 21. Therefore, claim 21 and its dependent claims are patentable over the cited art.

In light of the foregoing remarks, Applicants request that the Office issue a Notice of Allowance for all pending claims.

Respectfully submitted,
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